

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Applicant: David W. Farchmin
Serial No.: 10/675,535
Filed: September 30, 2003
Title: Wireless Location Based Automated Components
Art Unit: 2121
Confirm No. 6083
Examiner: Jennifer L. Norton
Our Ref.: 110003.00051.03AB206

APPEAL BRIEF

Mail Stop Appeal Brief - Patents
Commissioner for Patents
P.O. Box 1450
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Sir:

Appellant, having filed a timely Notice of Appeal of a Final Office Action in the above-identified patent application, hereby submits this Appeal Brief in support of patentability.

I. REAL PARTY IN INTEREST

The present application is assigned to Rockwell Automation Technologies, Inc. as evidenced by the assignment recorded by the United States Patent and Trademark Office on September 30, 2003 at Reel/Frame 014572/0971.

II. RELATED APPEALS AND INTERFERENCES

There are no related appeals or interferences.

III. STATUS OF CLAIMS

Claims 2, 24, 47, 55, 61, and 70 have been previously cancelled. Claims 1, 3-23, 25-46, 48-54, 56-60, and 62-69 are pending in the present application. Claims 1, 3-23, 25-46, 48-54, 56-60, and 62-69 have been finally rejected under 35 U.S.C. § 103(a). The rejections of each of claims 1, 3-23, 25-46, 48-54, 56-60, and 62-69 are being appealed.

IV. STATUS OF AMENDMENTS

Amendments prior to the final office action have been entered. No amendments were filed after the final rejection.

V. SUMMARY OF CLAIMED SUBJECT MATTER

The present invention includes systems and methods that allows a user of a handheld wireless information device (WID) to move about within a manufacturing facility and, based on the location of the WID, 1) receive location specific information and 2) remotely control user interfaces for nearby machinery and/or processes (i.e., to facilitate control by making adjustments) via the WID. To determine the location of the WID, stationary transmitters located throughout the facility transmit signals which are received by the WID and used to determine the present location of the WID. Alternatively, the WID transmits signals that are received by stationary receivers scattered throughout the facility and used by a networked processor to determine the WID location.

The accuracy of WID-calculated location determinations can be improved by increasing the amount of received location data used to calculate the location. One way to do this is to increase the quality of the received data such as by increasing the signal strength of the transmitted data. The amount of location data can also be increased by using additional stationary data receivers/transmitters and the quality of that data at critical locations within a facility (i.e., proximate operating machines where control/monitoring is usually most critical) can be increased by placing the stationary

receivers/transmitters proximate locations within the facility at which machine information access and/or control will be needed. In other words, instead of placing additional receivers at uniform locations throughout a facility, higher quality signals can be obtained by placing the receivers at locations proximate machines that are to be monitored and/or controlled via a WID.

One way to increase the number of data receivers while minimizing installation costs associated with installing additional receivers is to include the receivers in components that are already being installed in a facility for other purposes. Stationary human machine interfaces (HMIs) that are usable by the operator to monitor and/or control machines are one component necessarily being installed in facilities that may be outfitted with additional stationary receivers/transmitters. To this end, HMIs are routinely installed proximate machines to allow system operators to control and/or monitor machine operations. In addition, HMIs include processors that can easily provide processing power for transmitting and/or receiving signals, for calculating locations or for transferring information to some other processor for performing the locating computations.

Consistent with the above comments, claim 1 and claims that depend therefrom are directed to systems and methods for use in an automated environment 10 including at least a first automated assembly M1-M10 (paragraph 43, lines 1-2, and Fig. 1) including a plurality of components I1-I8 (HMIs) that facilitate an automated process (paragraph 45, lines 1-8), at least one portable wireless information device (WID) (paragraph 44, lines 1-4) and a controller 105 (paragraph 47, lines 1-4) for controlling the assembly.

A first component I1, for example, is included that is one of the plurality of components and that is linked (paragraph 50, lines 3-6, Fig. 1) to the controller 105 to facilitate at least a sub-process associated with the automated process, the first component I1 including at least a first wireless receiver 138 for receiving wireless signals from the at least one WID (paragraph 79, lines 5-6, Figs. 3a and 3b).

A processor 171 or 105 is included that receives signals from the first receiver 138 and runs location determining software for determining the location of the at least one WID as a function of the signals received therefrom (paragraph 80, Figs. 1 and 6). The first component I1 is a stationary human-machine interface (HMI) 130a device including at least one of an input device 136 for receiving input directly from a human user of the HMI and a display 134 for providing information directly to a human user of the interface device (paragraph 67, Figs. 3a and 3b).

With respect to claims 23, 31, 37, 40, 54, and 64, each of these claims has limitations that are similar to the claim 1 limitations described above.

Claim 66 and claims that depend therefrom are directed to systems and methods for use in an automated environment 10 including at least a first automated assembly M1-M10 (paragraph 43, lines 1-2, Fig. 1) including a plurality of components I1-I8 (HMIs) that facilitate an automated process (paragraph 45, lines 1-8) and a controller 105 for controlling the assembly (paragraph 47, lines 1-4).

The systems and methods include at least a first wireless information device (WID) 30 including a transceiver 38 and a first processor 71 (paragraph 61, Figs. 2a and 2b), and a first component I1 that is one of the plurality of components I1-I8 (HMIs) that is linked to the controller 105 to facilitate at least a sub-process associated with the automated process, the first component I1 including a first wireless transmitter 138 for transmitting wireless signals to the at least one WID, a display device 134 for presenting information directly to a human user, and an input device 136 for receiving input directly from a human user (paragraph 67, Figs 3a and 3b).

At least one receiver 35a, for example, is included, and at least a second processor 171 or 105 is linked to the first component I1 and to the at least one receiver, the at least a second processor running a program to determine WID position as a function of signal strength data generated by the transmitter 138 and the WID (paragraph 80).

The at least a first transmitter 138 transmits signals of known signal strength to the WID, the WID determines signal strengths and transmits signal strength data to the at least one receiver 35a and the second processor obtains the signal strength data from the at least one receiver and uses the obtained data to determine WID position.

VI. GROUNDS OF REJECTION TO BE REVIEWED ON APPEAL

In view of the final Office action mailed January 12, 2010, the claims stand as follows:

1). Claims 1, 3, 5, 7, 9, 11-23, 25, 26, 28-33, 35-42, 44, 48, 50, 51, 54, 56-60, and 62-69 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over U.S. Patent Publication No. 2005/0021158 to De Meyer et al ("De Meyer").

2). Claims 4, 6, 10, 27, 34, 43, 45, 46, 49, 52, and 53 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over De Meyer in view of U.S. Patent Publication No. 2003/0234741 to Rogers et al. ("Rogers").

3). Claim 8 stands rejected under 35 U.S.C. § 103(a) as being unpatentable over De Meyer in view of U.S. Patent Publication No. 2004/0235468 to Luebke et al. ("Luebke").

VII. ARGUMENTS

Legal Standard For Rejections Under 35 U.S.C. § 103

The burden of establishing a prima facie case of obviousness falls on the Examiner. Per MPEP § 2142, to reach a proper determination under 35 U.S.C. 103, the examiner must step backward in time and into the shoes worn by the hypothetical "person of ordinary skill in the art" when the invention was unknown and just before it was made. In view of all factual information, the examiner must then make a determination whether the claimed invention "as a whole" would have been obvious at that time to that person. Knowledge of applicant's disclosure must be put aside in reaching this determination, yet kept in mind in order to determine the "differences," conduct the search and evaluate the "subject matter as a whole" of the invention. The

tendency to resort to "hindsight" based upon applicant's disclosure is often difficult to avoid due to the very nature of the examination process. However, impermissible hindsight must be avoided and the legal conclusion must be reached on the basis of the facts gleaned from the prior art.

1). Claims 1, 3, 5, 7, 9, 11-23, 25, 26, 28-33, 35-42, 44, 48, 50, 51, 54, 56-60 and 62-69 are not obvious over De Meyer.

With respect to claim 1, the claim requires, among other things, a stationary human-machine interface that includes both (1) a wireless receiver and (2) at least one of an input device (e.g., a keyboard) to receive input directly from a human user and a display for providing information directly to a human user.

As previously noted in the Remarks After Fourth Non-Final Office Action dated November 11, 2009, Applicant admits that De Meyer's Background teaches systems that include stationary HMIs. Applicant also admits that De Meyer teaches an inventive system that includes stationary access point type data modules AP1, AP2, etc., and portable monitoring modules MU, where signals transmitted by a monitoring module MU and received by the access points AP1, AP2, etc., are used to ascertain the location of the monitoring module MU. Despite the terminology suggesting otherwise, AP1 and AP2 (dubbed 'HMI data modules') are not stationary HMI units in the sense that they cannot be used by a system user to directly enter information into the system or to directly receive information about a machine associated with the module.

However, even if De Meyer's background teachings and inventive teachings were to be combined to provide a system including stationary and mobile HMI type devices where stationary access points receive signals from the mobile HMIs and those signals are used to ascertain the location of the mobile HMI, absolutely nothing in De Meyer teaches or even remotely suggests that the wireless receivers may, should or could be included in stationary interface devices where the interface devices also include at least one of an input device and a display. Instead, in the Background, De Meyer teaches a stationary HMI, and in the Summary and Detailed Description, teaches

that a stationary HMI may be replaced by a wireless receiving access point (HMI data module) and a portable HMI (mobile control and monitoring modules MU).

The Examiner asserts that the combination of a variety of embodiments of De Meyer would have been known to one of ordinary skill in the art, and this combination of embodiments would comprise a wireless receiver included in a stationary interface device where the interface device also includes at least one of an input device and a display.

Applicant respectfully asserts that, in combining any of De Meyer's teachings, one of skill in the art would, at best, be motivated to provide a system including a stationary interface and a separate stationary access point proximate the interface where the access point, not the stationary interface, includes the receiver. A system including a wireless receiver separate from a stationary interface is not the same as a system that includes an interface (having at least one of an input device and a display) that itself includes a **wireless** receiver as required by claim 1 and claims that depend therefrom.

In addition, despite the Examiner's assertion that De Meyer does not teach away from stationary HMIs, Applicant maintains that De Meyer does teach away. In response, the Examiner cites MPEP 2123, which states in part "Disclosed examples and preferred embodiments do not constitute a teaching away from a broader disclosure or nonpreferred embodiments." It is important to recognize that De Meyer clearly describes problems with stationary HMIs throughout the Background section of the specification. For example, at paragraph [0006] De Meyer states "However, such a fixed, data-related allocation or assignment of an HMI device to an automation system and the technical installation connected thereto has drawbacks." See also the rest of paragraph [0006] and paragraph [0007]. This is not a description of a disclosed example or a preferred or nonpreferred embodiment. It is clear that De Meyer's invention is a replacement for stationary HMIs. Specifically, De Meyer states at paragraph [0008] "It is one object of the invention to provide a method for controlling and monitoring a technical installation, and an associated HMI system for carrying out this method, which, compared to conventional HMI systems, offer significantly improved

spatial and data-related flexibility." (Emphasis added). De Meyer clearly describes the problem (dedicated HMIs) in the Background, and then provides a solution to the problem (mobile HMIs).

Applicant examined De Meyer closely to attempt to identify any reason contemplated by De Meyer for including both stationary and mobile HMIs in a single system and was unable to locate even one suggestion or hint that both types of interfaces should be included in a single system. This lack of teaching or suggestion of combining in De Meyer is not surprising because De Meyer teaches a mobile replacement system for replacing stationary HMIs.

Teaching a replacement for a system is teaching away from that system. MPEP 2141.02 (VI) states that "A prior art reference must be considered in its entirety, i.e., as a whole, including portions that would lead away from the claimed invention."

Moreover, even if De Meyer is construed as simply teaching that stationary HMIs are a less preferred option, that does not address the fact that De Meyer fails to even remotely suggest that a stationary HMI (i.e., a traditional HMI including at least one of an input device and a display) could or should include a wireless receiver for receiving WID signals.

With respect to claims 23, 31, 37, 40, 54, and 64, each of those claims has limitations that are similar to the claim 1 limitations described above and Applicant believes that claims 23, 31, 37, 40, 54, and 64 and claims that depend therefrom are non-obvious over De Meyer for the same reasons that claim 1 is non-obvious as discussed above.

With respect to claim 66, the claim requires, among other things, that a wireless information device (WID) (1) receive signals from a transmitter, (2) determine signal strengths of the received signals and (3) transmit the signal strength data to a receiver and that a second processor that is separate from the WID use the signal strength data to determine WID position.

The phrase "signal strength data" in claim 66 of the present application (and as described in paragraph [0009] of the present application) is different than the phrase "signals of known signal strength," which is also included in claim 66. A signal of known

signal strength may include a signal having a known strength of ten units when initially transmitted. As known in the art, as the signal propagates through space, the signal loses strength so that, at 5 meters from the transmission point, the signal may have a strength of 6 units and at 10 meters the signal may have a strength of 2 units. In this case, when the signal is received at 5 and 10 meters and is measured, the signal strength data resulting therefrom would be 6 units and 2 units, respectively. Thus, while the signal of known strength is 10 units, the signal strength data is either 6 units or 2 units depending on the distance from the transmission point at which the signal is detected.

Turning to De Meyer, in no case does De Meyer teach or suggest transmitting signal strength data from any device to any other device. More specifically, De Meyer fails to teach or suggest a WID transmitting signal strength data to a second processor so that the second processor can use the signal strength data to determine WID location. In addition, De Meyer fails to teach or suggest a second processor that uses signal strength data transmitted to it by a WID to ascertain WID location.

De Meyer teaches two processes for determining MU or WID location. ***First***, in paragraphs [0076] and [0079], De Meyer teaches that a wireless device MU receives short range fields or "emissions" from HMI communication modules AP5, AP6, etc., and that device MU itself determines its own position (see the first sentences of paragraphs [0076] and [0079]). Here, Applicant admits that the signals generated by modules AP5 and AP6 are "signal strength" signals, but those signal strength signals are not generated by the MU (i.e., by a WID) and are not "signal strength data" signals. Thus, in this embodiment there is no second processor separate from the device MU that determines the position of the device MU, and instead the device MU determines its position and provides the position information to the second processor. In addition, the MU (i.e., the WID) in De Meyer's first system does not transmit signal strength data to a second processor and instead the MU transmits its position data (see paragraph [0076], lines 9-16, and paragraph [0079], lines 13-18) to the HMI communication module or data module.

In paragraph [0077], De Meyer teaches that in a second process, the wireless device MU generate "emissions" (i.e., "short range fields" as described in the second sentence in paragraph [0076]) that are received by modules AP5, AP6, etc., where the short range fields or emissions are analyzed to determine the position of the device MU. Here, emissions or short range fields do not include and are not akin to signal strength data. Instead, the short range emissions transmitted by the MU to modules AP5 and AP6 have to be analyzed to identify signal strength data when they are received by AP5 and AP6. Thus, in De Meyer's second process, known "signal strength" signals are not transmitted to a WID (instead, known signal strength signals are transmitted by a WID). Here the known signal strength signals are not signals received by De Meyer's MU, but are instead signals of known strength generated by the MU itself.

Applicant also points out that the Examiner has confusingly combined the teachings of both De Meyer's methods to arrive at the conclusion that claim 66 is obvious. To this end, claim 66 requires two different signal transmissions after which the WID location is determined. First, claim 66 requires transmission from a first transmitter to a WID. Second, claim 66 requires a second transmission that includes the signal strength data from the WID to the second processor after which the second processor determines WID location.

In contrast, De Meyer's first position determining method (see paragraphs [0076] and [0079]) teaches that short range field signals are transmitted from modules AP5, AP6 to device MU, and then device MU determines its own location as a function of the received short range field signals. In this first method there is no transmission from the MU to a second processor that includes signal strength data prior to determination of the MU position.

Also, in contrast, De Meyer's second position determining method (paragraph [0077]) teaches that the position determination process is kicked off when the MU transmits signals to a second processor that are then used by the second processor to determine MU position. Here, there is no transmission from a module AP5 or AP6 to the WID prior to the position determination. De Meyer teaches that the first and second methods are alternatives.

The Examiner combines the first method transmission and the second method transmission to provide the two transmissions required by claim 66. Applicant is clear that De Meyer's two transmissions should not be combined in this manner.

Furthermore, the Examiner has maintained the assertion that De Meyer teaches that "the WID determines signal strengths and transmits signal strength data to at least one receiver" and references paragraph [0076] of De Meyer for support.

It is clear from a thorough review of paragraph [0076] that paragraph [0076] does not include these teachings. As described above, De Meyer's paragraph [0076] teaches that a mobile monitoring module MU receives short range field signals from proximate communication modules and that the signals are used by the MU module to determine the position of the module MU. Thereafter during a "second step," module MU transmits the position data (i.e., the actual position of the module MU) to a proximate communication module AP6. Thus, it is clear from paragraph [0076] that De Meyer contemplates a system wherein the module MU determines its position and that the MU (i.e., the WID) does not transmit signal strength data to a receiver.

Moreover, claim 66, similar to claim 1, requires, in addition to a wireless information device (WID) (e.g., a hand held portable wireless device), a first component that includes a wireless transmitter, a display device for presenting information to a user and an input device for receiving input directly from a human user. As discussed above, nothing in De Meyer teaches or even remotely suggests a system that includes, in addition to a WID, a component that includes a display, an input device and a wireless transceiver and, in fact, because De Meyer teaches a replacement for standard stationary interface devices, De Meyer teaches away from such a system.

2). Claims 4, 6, 10, 27, 34, 43, 45, 46, 49, 52, and 53 are not obvious over De Meyer in view of Rogers.

Each of claims 4, 6, 10, 27, 34, 43, 45, 46, 49, 52, and 53 depend from claims that require limitations similar to the limitations described above with respect to claim 1, and each is therefore believed to be non-obvious over De Meyer for the essentially the same reasons that claim 1 is non-obvious as discussed above.

3). Claim 8 is not obvious over De Meyer in view of Luebke.

Claim 8 depends from independent claim 1, and is therefore believed to be non-obvious over De Meyer for the same reasons that claim 1 is non-obvious as discussed above.

Conclusion

In viewing the teachings of the cited references, alone or in combination, there is simply no teaching, suggestion, or motivation in the cited references or in the knowledge generally available to the artisan that would have led the artisan to combine the prior art teachings to arrive at the claimed invention. Furthermore, there is no rationale to support a conclusion that one skilled in the art could have combined the elements as claimed by known methods with no change in their respective functions, and the combination would have yielded nothing more than predictable results to the artisan at the time of the invention.

In view of the above, Appellant requests reversal of the final rejections regarding claims 1, 3-23, 25-46, 48-54, 56-60, and 62-69 and the issuance of a Notice of Allowance.

Respectfully submitted,

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Dated: April 9, 2010

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VIII. CLAIMS APPENDIX

(Patent Application No. 10/675,535)

1. (Previously Presented) An apparatus for use in an automated environment including at least a first automated assembly including a plurality of components that facilitate an automated process, at least one portable wireless information device (WID) and a controller for controlling the assembly, the apparatus comprising:

a first component that is one of the plurality of components and that is linked to the controller to facilitate at least a sub-process associated with the automated process, the first component including at least a first wireless receiver for receiving wireless signals from the at least one WID; and

a processor receiving signals from the first receiver and running location determining software for determining the location of the at least one WID as a function of the signals received there from;

wherein the first component is a stationary human-machine interface (HMI) device including at least one of an input device for receiving input directly from a human user of the HMI and a display for providing information directly to a human user of the interface device.

2. (Cancelled).

3. (Previously Presented) The apparatus of claim 1 wherein at least one of the automated assembly components includes a mounting surface accessible within the environment and proximate the automated assembly and wherein the HMI is mounted to the mounting surface.

4. (Previously Presented) The apparatus of claim 1 wherein the first receiver includes a wireless antenna.

5. (Previously Presented) The apparatus of claim 1 wherein the HMI includes the processor for determining location.

6. (Original) The apparatus of claim 5 wherein the location determining software causes the processor to perform a statistical analysis on the received signals to determine WID location.

7. (Original) The apparatus of claim 1 wherein the first component is linked to the controller via a communication network and is also linked to the processor via the communication network.

8. (Original) The apparatus of claim 7 wherein the network is an Ethernet network.

9. (Original) The apparatus of claim 7 wherein the processor is part of the controller.

10. (Original) The apparatus of claim 7 wherein the location determining software causes the processor to perform a statistical analysis on the received signals to determine WID location.

11. (Original) The apparatus of claim 1 wherein the first receiver is juxtaposed proximate the automated assembly and wherein the apparatus further includes at least a second receiver positioned at a second location relative to the automated assembly, the second receiver also providing received signals to the processor, the processor determining WID location as a function of the signals received from each of the first and second receivers.

12. (Original) The apparatus of claim 11 wherein the environment includes at least a second automated assembly controlled by the controller and including a second plurality of components provided to facilitate an automated process, the apparatus further including at least a second component that is one of the second plurality of components and that is linked to the controller, the second component including the second receiver for receiving signals from the at least one WID and providing the received signals to the processor.

13. (Original) The apparatus of claim 12 wherein each of the first and second components are human-machine interfaces (HMIs) and each is linked to the controller via a communication network.

14. (Original) The apparatus of claim 13 wherein the processor is embedded within the first HMI and wherein the second HMI is linked to the first HMI via the communication network.

15. (Original) The apparatus of claim 14 further including at least a third receiver positioned at a third location relative to the first and second automated assemblies for receiving signals from the at least one WID, the third receiver linked to the processor via the communication network, the processor receiving signals from the first, second and third receivers and using the received signal to determine WID location.

16. (Original) The apparatus of claim 14 further including a wireless data system, the data system including a plurality of access points, each access point including a receiver and a transmitter for receiving data from and transmitting data to the at least one WID, respectively.

17. (Original) The apparatus of claim 16 wherein at least a sub-set of the access points generates location information and wherein the location information is provided to the processor via the communication network and used by the processor to determine WID location.

18. (Original) The apparatus of claim 1 further including a wireless data system linked to the controller for transmitting data to and receiving data from the at least one WID.

19. (Original) The apparatus of claim 18 wherein the wireless data system includes data receivers that are separate from the first receiver.

20. (Original) The apparatus of claim 19 wherein the data system includes access points, each access point including one of the data receivers and also including a data transmitter, information received by at least a sub-set of the data receivers provided to the processor, the processor using the information from the sub-set of data receivers and the first receiver to determine WID location.

21. (Original) The apparatus of claim 20 wherein the first component also includes a first transmitter for transmitting data to the at least one WID.

22. (Original) The apparatus of claim 1 wherein the first component includes a transmitter for wirelessly transmitting data.

23. (Previously Presented) A system comprising:
a controller for controlling an automated assembly;
at least one portable wireless information device (WID) that transmits wireless signals;

at least a first automated assembly including a plurality of components that together facilitate an automated process, the plurality of components including a first component linked to the controller to facilitate at least a sub-process associated with the automated process, the first component including a wireless receiver for receiving signals from the at least one WID; and

a processor linked to the first component for obtaining signals from the receiver and running location determining software for determining the location of the at least one WID as a function of the received signals;

wherein the first component is a stationary human-machine interface (HMI) device including at least one of an input device for receiving input directly from a human user of the HMI and a display for providing information directly to a human user of the interface device.

24. (Cancelled).

25. (Previously Presented) The system of claim 23 wherein at least one of the automated assembly components includes an accessible mounting surface and wherein the HMI is mounted to the mounting surface.

26. (Previously Presented) The system of claim 23 wherein the HMI includes the processor.

27. (Original) The system of claim 23 wherein the location determining software causes the processor to perform at least one of a statistical analysis and a triangulation method on the received signals to determine WID location.

28. (Previously Presented) The system of claim 23 wherein the first receiver is juxtaposed proximate the automated assembly, the system further including at least a second automated assembly controlled by the controller and including a second plurality of components provided to facilitate a second automated process, the second plurality of components including at least a second component linked to the controller to facilitate at least a sub-process associated with the second assembly, the second component including a second receiver positioned proximate the second assembly, the second receiver providing received signals to the processor, the processor determining WID location as a function of signals received from each of the first and second receivers.

29. (Previously Presented) The system of claim 23 the second component is a human-machine interface (HMI).

30. (Original) The system of claim 29 wherein the processor is embedded within the first component.

31. (Previously Presented) A location determining assembly for use in an automated environment including at least a first automated assembly including components that facilitate an automated process, at least one portable wireless information device (WID) and a controller for controlling the assembly, the assembly comprising:

- a first human-machine interface (HMI) associated with the first automated assembly and linked to the controller via a communication network for at least one of providing information thereto and receiving information there from, the HMI including an input device for receiving input directly from a human user of the HMI, a display for providing information directly to a human user of the interface device and a first wireless receiver for receiving wireless signals from the at least one WID; and

- a processor receiving signals from the receiver and running location determining software for determining the location of the at least one WID as a function of the signals received there from.

32. (Original) The assembly of claim 31 wherein the environment further includes at least a second automated assembly controlled by the controller and wherein the assembly further includes a second HMI associated with the second automated assembly and linked to the controller to at least one of provide information thereto and receive information therefrom, the second HMI including a second wireless receiver for receiving wireless signals from the at least one WID, the processor receiving signals from each of the first and second receivers and determining WID location as a function of the received signals.

33. (Original) The assembly of claim 32 wherein the processor is embedded within the first HMI.

34. (Original) The assembly of claim 32 wherein the processor performs at least one of a statistical analysis and a triangulation method on the received signals to determine WID location.

35. (Original) The assembly of claim 31 wherein the processor provides WID location determination information to the controller and the controller uses the location information to perform a location dependent function.

36. (Original) The assembly of claim 35 wherein the location dependent function includes one of providing location dependent information to the at least one WID and modifying control of the automated assembly.

37. (Previously Presented) A system for use in an automated environment including at least first and second automated assemblies for performing first and second automated processes, at least one portable wireless information device (WID) and a controller for controlling the assemblies, the system comprising:

- a wireless data communication system linked to the controller and for transmitting data to and receiving data from the at least one WID;

- a first human-machine interface (HMI) linked to the controller to facilitate at least a sub-process associated with the first automated process and including a first receiver for receiving signals from the at least one WID, the first HMI positioned proximate the first automated assembly for providing information related thereto directly to a human via a display device and receiving control instructions therefore directly from a human via an input device;

- a second human-machine interface (HMI) linked to the controller to facilitate at least a sub-process associated with the second automated process and including a second receiver for receiving signals from the at least one WID, the second HMI positioned proximate the second automated assembly for at least one of providing information related thereto and receiving control instructions there for; and

- a processor receiving signals from the first and second receivers and running location determining software for determining the location of the at least one WID as a function of the signals received therefrom.

38. (Original) The system of claim 37 wherein the wireless communication system includes a plurality of access points.

39. (Original) The system of claim 37 wherein the processor is embedded in the first HMI.

40. (Previously Presented) A method for use in an automated environment including at least a first automated assembly, at least one portable wireless information device (WID) and a controller for controlling the assembly, the assembly including a plurality of components provided to facilitate an automated assembly process, the plurality of components including a first component linked to the controller to facilitate an assembly sub-process, the method comprising the steps of:

equipping the first component with a wireless receiver for receiving wireless signals from the at least one WID;

receiving WID signals via the receiver; and

using the received signals to determine WID location;

wherein, the first component is a stationary human-machine interface (HMI) device including at least one of an input device for receiving input directly from a human user of the HMI and a display for providing information directly to a human user of the interface device.

41. (Previously Presented) The method of claim 40 wherein the step of equipping includes embedding the receiver in the HMI.

42. (Original) The method of claim 41 wherein at least one of the automated assembly components includes a mounting surface accessible within the environment and proximate the automated assembly and wherein the method further includes the step of mounting the HMI to the mounting surface.

43. (Original) The method of claim 41 wherein the step of embedding includes integrating a wireless antenna with the HMI.

44. (Original) The method of claim 41 wherein the step of using the received signals includes providing a processor as part of the HMI and using the processor to determine WID location.

45. (Original) The method of claim 44 wherein the step of using the processor includes at least one of performing a statistical analysis and a triangulation method on the location information received from the receiver.

46. (Original) The method of claim 45 further including the step of receiving additional WID signals via other receivers, providing the other received signals to the processor and performing the statistical analysis on the received WID signals.

47. (Cancelled).

48. (Original) The method of claim 40 wherein the environment includes at least a second automated assembly controlled by the controller, the second assembly including a plurality of components provided to facilitate a second automated assembly process, the plurality of components including a second component linked to the controller to facilitate an assembly sub-process, the method further including equipping the second component with a second receiver for receiving WID signals, the step of receiving including receiving signals from each of the first and second receivers and the step of using the received signals to determine WID location including using the signals from each of the first and second receivers.

49. (Original) The method of claim 40 wherein the step of using includes performing at least one of a statistical analysis and a triangulation method on the received signals to determine WID location.

50. (Original) The method of claim 40 wherein the step of using includes providing a processor, linking the processor to the first component via a communication network, transmitting the receiver signals via the communication network to the processor and performing an algorithm via the processor to determine WID location.

51. (Original) The method of claim 50 further including the step of linking additional receivers to the processor, obtaining additional WID signals via the additional receivers and providing the additional WID signals to the processor via the communication network, the step of using further including using at least a sub-set of the signals received from each of the receivers to determine WID location.

52. (Original) The method of claim 40 wherein the step of equipping includes providing a port on the first component for receiving a linkage, providing an antenna, mounting the antenna and linking the antenna to the first component port via a linkage.

53. (Original) The method of claim 52 wherein the first component is a stationary human-machine interface (HMI) device.

54. (Previously Presented) A system for use in an automated environment including a plurality of automated assemblies, each assembly including components that facilitate automated processes and at least one portable wireless information device (WID), the system comprising:

at least a first processor;

a set of communication access points configured to receive signals from, and transmit signals to, the WID;

a set of wireless receivers, each wireless receiver integrated with a different component from a first sub-set of the assembly components and configured to receive signals from the WID; and

at least a first communication network linking at least a sub-set of the first sub-set component to the at least one processor and also linking each access point to the at least one processor, the at least one processor obtaining WID signals from each of the receivers and also at least one of transmitting signals to, and receiving signals from, each of the first sub-set assembly components, via the at least a first network;

wherein at least a sub-set of the first sub-set of the assembly components includes human-machine interfaces (HMIs), each HMI including at least one of an input device for receiving input directly from a human user of the HMI and a display for providing information directly to a human user of the interface device.

55. (Cancelled).

56. (Original) The system of claim 54 wherein the at least one processor both transmits signals to and receives signals from at least a sub-set of the first sub-set of assembly components via the network.

57. (Previously Presented) The system of claim 54 wherein the processor uses the obtained WID signals to determine WID location.

58. (Original) The system of claim 57 wherein the processor also uses WID signals received from at least a sub-set of the communication access points to determine WID location.

59. (Original) The system of claim 54 wherein the at least one processor includes at least a first processor linked via the at least a first network to the access points and at least a second processor linked via the at least a first network to the first sub-set of assembly components and wherein the at least a first network links the first and second processors together.

60. (Original) The system of claim 59 wherein the first sub-set of assembly components includes a first component and wherein the second processor is integrated into the first component.

61. (Cancelled).

62. (Original) The system of claim 59 wherein the at least a first network includes at least a first network that links the communication access points to the first processor and at least a second network that links the first sub-set assembly components to the second processor.

63. (Original) The system of claim 54 wherein the at least a first processor is remotely located from the first sub-set assembly components.

64. (Previously Presented) A method for use in an automated environment including a plurality of automated assemblies, at least one portable wireless information device (WID) and at least one controller for controlling the assemblies, each assembly including a plurality of components provided to facilitate an automated assembly process, at least a first sub-set of the assembly components linked to the controller to at least one of provide signals thereto or receive signals therefrom, the method comprising the steps of:

- equipping at least a sub-set of the first sub-set of assembly components with wireless receivers for receiving wireless signals from the at least one WID;

- receiving WID signals via the receivers; and

- using at least a sub-set of the received signals to determine WID location;

- wherein, the first component is a stationary human-machine interface (HMI) device including at least one of an input device for receiving input directly from a human user of the HMI and a display for providing information directly to a human user of the interface device.

65. (Previously Presented) The method of claim 64 wherein the step of equipping includes embedding receivers in the assembly components.

66. (Previously Presented) A system for use in an automated environment including at least a first automated assembly including a plurality of components that facilitate an automated process and a controller for controlling the assembly, the system comprising:

- at least a first wireless information device (WID) including a transceiver and a first processor;

- a first component that is one of the plurality of components that is linked to the controller to facilitate at least a sub-process associated with the automated process, the first component including a first wireless transmitter for transmitting wireless signals to the at least one WID, a display device for presenting information directly to a human user and an input device for receiving input directly from a human user;

- at least one receiver; and

- at least a second processor linked to the first component and to the at least one receiver, the at least a second processor running a program to determine WID position as a function of signal strength data generated by the transmitter and the WID;

wherein, the at least a first transmitter transmits signals of known signal strength to the WID, the WID determines signal strengths and transmits signal strength data to the at least one receiver and the at least a second processor obtains the signal strength data from the at least one receiver and uses the obtained data to determine WID position.

67. (Original) The system of claim 66 wherein the at least a first component includes a plurality of components, each of the plurality including a separate transmitter and, wherein, the WID receives signals from at least a sub-set of the transmitters, determines signal strength and transmits the signal strength data to the receiver.

68. (Original) The system of claim 66 wherein the at least one receiver is separate from the at least one component.

69. (Original) The system of claim 68 wherein the at least one receiver is a communication access point that is part of a wireless communication network.

70. (Cancelled).

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IX. EVIDENCE APPENDIX

There is no evidence, other than the documents cited in the final Office Action.

X. RELATED PROCEEDINGS APPENDIX

There are no decisions in related proceedings.